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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/612,334

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Horst Wittur

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EXAMINER

KRUER, STEFAN

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/612,334	<b>Applicant(s)</b> WITTUR ET AL.	
	<b>Examiner</b> Stefan Krueer	<b>Art Unit</b> 3654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 22 - 41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22 - 41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Request for Continued Examination***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 June 2010 has been entered.

***The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.***

**Claims 22 – 23, 26 – 30 and 35 - 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkovitz (3,838,752) in view of Aulanko et al (5,429,211) and in further view of Nation (4,158,283).

Re: **Claims 22 and 36 - 41**, Berkovitz discloses the prior art of a gearless cable-operated elevator (Fig. 6A), the elevator comprising:

- a cage (20, Fig. 1);
- a counterweight (22);
- a plurality of parallel carrier cables (24);
- cage guide rails (not depicted, understood);
- counterweight guide rails (not depicted, understood);
- a drive sheave (82, Fig. 6A); and
- a counter sheave (84);
- wherein the cage is configured to accommodate human passengers,
- wherein the cage and the counterweight are supported by the plurality of parallel carrier cables, wherein the cage is guided by the cage guide rails, wherein the counterweight is guided by the counterweight guide rails, wherein the drive sheave and the counter sheave are spaced apart from each other,

Art Unit: 3654

- wherein the plurality of parallel carrier cables wraps at least partially around the drive sheave a first time, at least partially around the counter sheave a first time, at least partially around the drive sheave a second time, and at least partially around the counter sheave a second time,
- wherein the drive sheave is configured to act on the plurality of parallel carrier cables in order to move the cage and the counterweight,
- wherein each cable of the plurality of parallel carrier cables is a steel cable (Col. 3, L. 29 - 35),
- wherein the drive sheave includes semicircular grooves (108, 108', Fig's 9A-9B),
- wherein the semicircular grooves include undercut portions (110, 110'),
- wherein the drive sheave is configured so that the plurality of parallel carrier cables runs in the semicircular grooves; however,

though Berkovitz discloses his undercut portions having a ratio of width to rope diameter of 0.375 and the diameter of his sheave being 25% less than that of the prior art of geared systems in relation to a given cable diameter (Col. 7, L. 25 - 32), and wherein a diameter of drive sheave to a nominal diameter of a conventional steel cable is greater than or equal to 40:1 is well known in the art, Berkovitz is silent with respect to each cable of the plurality of parallel carrier cables has a nominal diameter greater than 5 mm and less than 7 mm and his elevator system is without a machine room.

Attention is directed to Aulanko et al who teach an elevator without machine room, the elevator comprising:

- a plurality of carrier cables (3);
- cage guide rails (10);
- counterweight guide rails (11);
- wherein a cage (1) is guided by the cage guide rails (10),
- wherein a counterweight (2) is guided by the counterweight guide rails (11),
- wherein their drive sheave (7) is driven by a gearless drive machine (6);

It would have been obvious to one of ordinary skill in the art to modify the reference of Berkovitz with the teaching of Aulanko et al to provide the elevator system of Berkovitz with a gearless drive mounted for on guide rail(s) or onto a beam or frame within a hoistway, thereby without a machine room, for savings in space.

However, Aulanko et al are silent with respect to their plurality of carrier cables each having a diameter in a range of 5 mm to 7 mm.

Attention is directed to Nation who teaches wherein each cable of an elevator, hoist crane of mine shafts (Col. 9, L. 7) is a steel cable, wherein each cable has a nominal diameter greater than 5 mm and less than 7 mm, ("1/4-inch stainless steel cable, Col. 7, L. 511 – 18 & 5 – 58, Col. 10, L. 13 – 23 & Col. 1, L. 49 - 65), whereby Nation teaches his invention regarding the use of titanium alloyed cables for greater fatigue strength and lesser percent-elongation when compared to conventional carbon and stainless steel cables.

Nevertheless, Nation reviews the performance of 1/4-inch wires of titanium alloy and stainless steel, thereby the generation of smaller diameter cables comprising said wires that "... overcomes a stiffness problem to provide flexibility, the essential system handling characteristic", thereby enabling a reduced D/d ratio of 25 to 30 (Col. 6, L. 40) as well.

It would have been obvious to one of ordinary skill in the art to modify the invention of Berkovitz and Aulanko et al with the teaching of Nation to provide a plurality of carrier cables, each having a diameter in a range of 5 mm to 7 mm, to provide greater flexibility in achieving a small traction sheave diameter and therewith a smaller D/d ratio for savings in drive capacity and overall machine space.

Re: **Claim 23**, Berkovitz and Aulanko et al are silent concerning wherein the ratio of the diameter of the drive sheave to the nominal diameter of each cable of the plurality of carrier cables is substantially 34:1.

It would have been obvious to one of ordinary in the art at the time of the invention was made to make the ratio of a diameter of the drive sheave to a nominal

Art Unit: 3654

diameter of carrier cable disclosed by Berkovitz substantially 34:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Minor differences between the prior art and a claimed device may be a matter of design choice absent evidence to the contrary. See *In re Rice*, 341 F.2d 309, 314 (CCPA 1965). Where the difference between the claimed invention and the prior art is some range or other variable within the claims the applicant must show that the particular range is critical, generally by showing that the claimed range achieves

Re: **Claim 26**, Berkovitz discloses wherein an axis of rotation of the drive sheave is parallel to an axis of rotation of the counter sheave.

Re: **Claim 27**, Berkovitz discloses wherein a plane in which the drive sheave rotates is displaced from a plane in which the counter sheave rotates.

Re: **Claim 28**, Berkovitz discloses wherein the drive sheave and the counter sheave are arranged horizontally with respect to each other, or

wherein the drive sheave and the counter sheave are arranged vertically with respect to each other.

Re: **Claim 29**, Berkovitz discloses wherein the elevator is configured so that the drive sheave is higher than the counter sheave.

Re: **Claim 30**, Berkovitz discloses wherein a suspension ratio of the cage is 1:1 or 2:1.

Re: **Claim 35**, Berkovitz discloses wherein the counter sheave serves as a distancing deflection sheave.

Re: **Claims 24 and 25**, Berkovitz is silent concerning wherein the elevator is configured for cage loads less than or equal to 2,000 kg and wherein the elevator is configured for cage loads greater than or equal to 300 kg and less than or equal to 1,000 kg.

Aulanko et al teach wherein an elevator is configured for cage loads less than or equal to 2,000 kg, and wherein the elevator is configured for cage loads greater than or equal to 300 kg and less than or equal to 1,000 kg, Column 6, Lines 41-45.

It would have been obvious to one of ordinary skill in the art at the time of the invention to make to configure the cage load disclosed by Berkovitz for cage loads less than or equal to 2,000 kg and greater than or equal to 300 kg and less than or equal to 1,000 kg as taught by Aulanko et al to allow for a motor with a very flat construction optimizing the space within a hoistway.

Furthermore, It would have been obvious to one of ordinary in the art at the time of the invention was made to configure the cage load disclosed by Berkovitz for cage loads less than or equal to 2,000 kg and greater than or equal to 300 kg and less than or equal to 1,000 kg, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Minor differences between the prior art and a claimed device may be a matter of design choice absent evidence to the contrary. See *In re Rice*, 341 F.2d 309, 314 (CCPA 1965). Where the difference between the claimed invention and the prior art is some range or other variable within the claims the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990).

**Claims 31 - 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkovitz in view of Aulanko et al and Nation, as applied to Claim 22, and further in view of Hollowell et al (WO 99/43595).

Re: **Claim 31**, Berkovitz, Aulanko et al and Nation are silent concerning wherein the drive sheave and the counter sheave are operatively attached to the cage.

Hollowell et al teach wherein a drive sheave 30 and a counter sheave 34 are operatively attached to a cage 16.

It would have been obvious to one of ordinary skill in the art at the time of the invention to operatively attach the drive sheave and the counter sheave of the drive sheave drive disclosed by Berkovitz to the cage as taught by Hollowell et al to accommodate the elevator components within the environmental restraints of the shaft.

Re: **Claim 32**, Berkovitz discloses wherein a suspension ratio of the cage 20 is 1:1, 2:1, or 4:1.

Re: **Claims 33 and 34**, Berkovitz and Aulanko et al are silent concerning wherein the drive sheave is operatively attached to a top or bottom of the cage, and wherein the counter sheave is operatively attached to the top or bottom of the cage.

Hollowell et al teach wherein their drive sheave is operatively attached to a top or bottom of the cage, and

wherein the counter sheave is operatively attached to the top or bottom of the cage, referred to in Claims 2 and 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention to operatively attach the drive sheave and the counter sheave of the drive sheave drive disclosed by Berkovitz on the top or bottom of the cage as taught by Hollowell et al to accommodate the elevator components within the environmental restraints of the shaft.

### ***Response to Arguments***

Applicant's arguments filed 4 June 2010 have been fully considered but they are not persuasive.

The rejections of the previous office action were in response to the claim language. Applicant's arguments are based on the amended claim language applied to the prior art of record; consequently, this office action comprises a detailed response to Applicant's arguments.

With respect to applicant's argument "... wherein each cable of the plurality of [parallel] carrier cables has a nominal diameter greater than 5 mm and less than 7 mm"



Art Unit: 3654

is contrary to what a PHOSITA typically would use... ” in that “For example, the Safety Code for Elevator and Escalators A17.1 paragraph 2.20.4 (issued by the American Society of Mechanical Engineers) requires a minimum diameter of 9.5 mm for hoisting and counterweight ropes”, applicant's attention is directed to the prior art cited for pertinence to the instant invention below.

In view of applicant's assertion and the newly cited prior art, the prior art as previously applied, Scholder, remains of consideration.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Aulanko et al (WO 02/074677 A2, U.S. Patent 7,461,721) is cited for an elevator system without a machine room having a plurality of cables wherein each cable has “a diameter of less than 8 mm, preferably 3 - 5 mm” (Claim 3), wherein his “... drive machine may be of geared or a gearless type... preferably ... a gearless machine... [and] may be fixed to a wall of the elevator shaft, to the ceiling to a guide rail or guide rails or to some other structure, such as a beam or frame” (sic) (Page 8, 2<sup>nd</sup> Para.), whereby due to the thinner wires comprising his cables, the cables are thinner while his wires are stronger than conventional wires, enabling the use of smaller diameter pulleys and drive sheave which in turn promotes savings in drive capacity and space, therein furthering the benefits of an elevator system without a machine room (Page 6, 2<sup>nd</sup> indentation).

Korkeankangas et al (2009/0127033), Hoffend, III (2007/0278046), Tanaka et al (2009/0008192) and Kawasaki et al (2008/0277207) are cited for elevator systems comprising a plurality of cables, wherein each cable has a diameter in a range of 4 - 6 mm.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Kruer whose telephone number is 571.272.5913. The examiner can normally be reached on M-F.

Art Unit: 3654

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Q. Nguyen, can be reached on 571.272.6952. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866.217.9197 (toll-free).

/Stefan Kruer/

Examiner, Art Unit 3654

16 July 2010

/John Q. Nguyen/

Supervisory Patent Examiner, Art Unit 3654